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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,057	02/20/2002	Chang Chul Ha	CDDC/CHC/001	8563

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cDREAM DISPLAY CORPORATION  
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EXAMINER

KEANEY, ELIZABETH MARIE

ART UNIT PAPER NUMBER

2882

DATE MAILED: 09/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

10/080,057

Applicant(s)

HA ET AL.

Examiner

Elizabeth Gemmell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the group of laterally separated emitter electrodes (independent claim 2) and the dual dielectric layer (dependent claim 3) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

The disclosure is objected to because of the following informalities:

- Page 1, line 7: the co-pending application number should be filled in.
- Page 10, line 34: "bas"; should be --base--.

Appropriate correction is required.

### ***Claim Objections***

Claims 4,5, and 8 are objected to because of the following informalities:

- Claims 4 and 5: It is unclear to the examiner how the dielectric layer can be comprised of a single layer, when the previous limitation (claim 3) discloses the dielectric layer is a dual layer.

- It appears from the specification of the instant Application, that claims 4 and 5 should be dependent upon claim 2, and are interpreted as such for the purpose of this action.
- Claim 8: "plurality of."; should be --plurality of--.
- Claim 9: It is unclear to the examiner how the seed strips can be different but have the same antecedent basis as the prior plurality of seed strips. Therefore, for the purpose of this office action, the examiner has interpreted this limitation to mean they are the same plurality of seed strips.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2,5,6 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Jones et al. (US Patent 5,828,163; hereinafter Jones).

Re claim 2: Jones discloses, in figures 3 and 4 and in column 5, lines 33+, a device comprising:

- a group of laterally separated emitter electrodes (122);

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- an electrically resistive layer (132) overlaying parts of the emitter electrodes;
- a dielectric layer overlying the resistive layer (147);
- a plurality of laterally separated gate electrodes overlying the dielectric layer above the resistive layer (124); and
- a multiplicity of electron-emissive elements (30)
  - positioned over a patterned seed layer above the emitter electrodes; and
  - situated in composite openings extending through the gate electrodes and the dielectric layer.

Re claim 5: Jones discloses the dielectric layer comprises a single layer of silicon dioxide (column 7, lines 47+).

Re claim 6: Jones discloses the electron-emissive-elements comprised of carbon (30).

Re claim 12: Jones discloses a carbon based emitter fabrication method comprising:

- an emitter electrode overlying a glass substrate (21; column 3, line 34);  
and
- patterning the seed layer to form a plurality of strips (34).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones in view of Applicant's admitted prior art.

Jones shows all the limitations as shown above.

However, Jones fails to disclose the gate electrode having lateral edges in approximate vertical alignment with lateral edges of the dielectric layer.

The Applicant's admitted prior art discloses a gate electrode having lateral edges in approximate vertical alignment with lateral edges of the dielectric layer (figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Jones to have a gate electrode having lateral edges in approximate vertical alignment with lateral edges of the dielectric layer because it is a well known equivalent in the art and an artisan would have recognized the substitution is based on design choice and is absent of showing criticality.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones in view of Xie et al. (US Patent 6,204,597; hereinafter Xie).

Jones discloses all the limitations as shown above.

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However, Jones fails to disclose the dielectric layer comprising a dual layer of silicon nitride and silicon dioxide.

Xie discloses, in figure 6 and in column 2, lines 10+, a field emitter display having a dual layer of silicon nitride and silicon dioxide for the dielectric layer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the image device disclosed by Jones with that dual dielectric layer because by using a dual layer the electric field strength at the electron emitter is improved and therefore improving the overall display image resolution.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones in view of Rolfson et al. (US Patent 5,831,378; hereinafter Rolfson).

Jones discloses all the limitations as shown above.

However, Jones fails to disclose a single layer dielectric layer comprising silicon nitride.

Rolfson discloses, in figure 1 and in column 4, lines 15+, a field emitter display having a single layer of silicon nitride as the dielectric layer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the image display disclosed by Jones with that of a single layer of silicon nitride as the dielectric layer because by using silicon nitride in place of the silicon dioxide, the insulating layer has a higher mechanical strength than the oxide.

Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones.

Re claim 7: Jones shows all the limitations as shown above.

However, Jones fails to disclose electron-emissive-elements are filaments.

It would have been obvious to one of ordinary skill in the art to substitute filaments for a micro tip as the electron-emissive-element because it is a well-known functional equivalent in the art and an artisan would have recognized the substitution is based on design choice and is absent of showing criticality.

Re claim 8: Jones discloses, in figure 4 and throughout the disclosure, the patterned layer comprises a plurality of laterally separated seed strips (138), each extending laterally over the resistor layer.

Re claim 9: Jones discloses, in figure 4 and through out the disclosure, the plurality of laterally separated seed strips (138) underlying a group of electron-emissive elements (30).

Re claim 10: Jones discloses, in column 5, lines 22+, the group of electron-emissive elements defining a pixel.

Re claim 11: Jones discloses, in figure 3 and throughout the disclosure, the electron-emissive elements allocated into a number of laterally separated sets, each

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comprising multiple electron-emissive elements, at least one of the sets overlying each conductive strip.

### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US Patent 6,133,678 discloses a field emission element.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Gemmell whose telephone number is (703) 305-1937. The examiner can normally be reached on Monday-Thursday 6:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (703) 308-4858. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



emg  
July 28, 2003



DAVID V. BRUCE  
PRIMARY EXAMINER